sponding to the diseased ear, empyema of the middle-ear cavities from the attic to the mastoid without free outlet should be suspected. Pain now indicates either this condition or a graver one, viz., extradural otogenous abscess.

HYGIENE AND PUBLIC HEALTH.

UNDER THE CHARGE OF
CHARLES HARRINGTON, M.D.,
ASSISTANT PROFESSOR OF HYGIENE, HARVARD MEDICAL SCHOOL,
AND
EDWARD F. WILLOUGHBY, M.D.,
OF LONDON.

Disinfectant Properties of Alcohol.—The conclusions arrived at by Epstein and others concerning the value of alcohol as a disinfectant have been corroborated by BERTARELLI (*Il Policlinico*, 1900, through *Revue d'Hygiene*, January, 1901), who experimented with silk threads, infected with fresh and old cultures of *B. prodigiosus*, *B. pyocyaneus*, *B. pestis*, *B. choleræ*, *B. typhosus*, *Staphylococcus pyogenes aureus*, and sporulating *B. anthracis* and *B. subtilis*, which were exposed at different temperatures and for periods ranging from five minutes to fifty days. The best results were obtained with alcohol of 50 per cent. strength, the power diminishing with departures in both directions from this dilution. Thus, 70 per cent. strength was more powerful than 25 per cent. strength, and both than 88 and 99 per cent. The action of any dilution on spores was practically nothing. Alcoholic solutions of corrosive sublimate (1 : 1000), carbolic acid (3 per cent.), chromic acid (1 per cent.), silver nitrate (0.40 per cent.), and zinc sulphocarbolate (2 per cent.) were more active the less the alcoholic strength.

Tin in Canned Foods.—Specimens of canned meats of various ages up to four years were examined by F. WIRTHLE (*Chemiker Zeitung*, 1900, xxiv., p. 263) with reference to the presence of tin and the probable influence of duration of contact on its amount. He concluded that the corrosive action increases slightly after the second year, and that the meat itself takes up a larger amount than the juice, but the amounts found in both were slight. The most marked corrosion occurs where the tin comes in contact with the fatty parts. With regard to the toxicological importance of tin in meats and fish, A. RÖSSING (*Zeitschrift für angewandte Chemie*, 1900, p. 147) asserts that the danger must be extremely slight and is unworthy of attention, for the compound formed is insoluble and so resistant to the action of the digestive juices that only the merest traces can be taken up. According to Wirthle, in some cases the compound is basic stannous chloride; in others a sulphide. Rössing believes it to be mainly an oxide.

Concerning the Anopheles Mosquitoes.—From the results of very numerous observations, PROFESSOR A. CELLI (*Journal of the Sanitary Insti-

tute, January, 1901, p. 619) asserts that the larvæ of Anopheles live in water clean or foul, clear or turbid, acid or alkaline, and ferruginous, but not in water containing salt (salt marshes, sea water, and mixtures with fresh water in the proportion of two to one), very strong sulphur waters, nor water that is putrid from the putrefaction of animals and textile plants. They avoid water in which there is any movement (currents, ripplings, caused even by light winds; mechanical disturbance, as by the passage of boats), or which is without growth of aquatic plants, of which they prefer the filamentous species which do not occupy the whole free surface of the water where they rise to breathe. The mature mosquitoes bite in the evening and at night. They are transported by winds, in grass, hay, etc., and in vehicles of various kinds.

The old idea that putrid waters and the emanations therefrom are causes of malarial fevers is inconsistent with the fact that the specific gnats do not live in stinking waters, and the prejudice against brackish water and salt marshes on the score of being conducive to malaria is likewise inconsistent with repeated demonstrations that the larvæ cannot live in very brackish or salt water. He points out that all hydraulic improvements designed to free districts from malaria must sweep away the conditions favorable to the life of the infecting mosquitoes—must either remove fresh waters from the surface or put them in motion. When complete removal of marsh water is impossible, as is often the case where the movement of the water is hindered by vegetation, the larvæ have abundant opportunity for development; and even where currents exist, there are, along the edges, incurvations or grass where the larvæ hide. Hence, drainage canals should be periodically flushed at intervals of twelve to fifteen days to clear them of larvæ, and all marshy vegetation should be torn up as it grows. In malarial districts, dwellings should be built in the highest and dryest situations possible, though even there the mosquitoes may go or be carried, as happens in the highest parts of the Roman Campagna, which are greatly infested. Even the upper floors of tall buildings are not free from the visits of mosquitoes when they are hungry for blood, and all windows and outer doors should be protected against them by wire netting, and the screen doors should be provided also with springs to cause them to be kept closed when not in use. The walls of the rooms should be light in color, so that mosquitoes resting on them may easily be seen. Sometimes even the flue outlets of the chimneys should be screened. Trees in the near neighborhood of houses act as a hiding place for mosquitoes, which in the evening try to gain entrance, especially into rooms in which lights are burning.

In agricultural operations, he points out that no turning up of the soil can, as has been believed, be the cause of malaria. Irrigation cannot be detrimental, provided the water reaches the soil in no greater amount than it does in a shower of rain and the canals by which it flows in or out are not of such a character as to allow of stagnation. But ditches in which water becomes stagnant and vegetation accumulates afford good breeding facilities to the mosquitoes. Periodical flushing at intervals of twelve to fifteen days will overcome the difficulty. Rice fields cannot be made healthy, because, even though the water may run, there are always dead points where there is no current, and there the larvæ are protected. Moreover, the plants themselves afford a shelter.

According to *The Lancet* (March 23, 1901, p. 875), Dr. Patrick Manson has proposed an expedition to the Pacific Islands to investigate the causes of the apparently capricious distribution of the malarial mosquitoes, the presence or absence of which depends upon local conditions inimical to them. It is proposed to study the mosquitoes of an island where the disease is unknown and those of another where it is endemic, and then to convey the specific varieties to the non-malarial place for the purpose of attempting there to breed them under laboratory conditions and in the company of fauna and flora peculiar to the place, with the view to discover something antagonistic to their existence, which may then be introduced into localities where malaria is endemic.

Selenium Poisoning from Impure Beer.—At a meeting of the Royal Commission on Arsenic Poisoning, held on March 15, 1901 (*British Medical Journal*, March 23, 1901), in the course of the investigation of the recent extensive epidemic of arsenic poisoning due to beer made with impure glucose, Dr. F. W. FUNNICLIFFE stated that he and Dr. Rosenheim had found selenium in the incriminated sulphuric acid (used in converting starch to glucose) to the extent of about 0.3 per cent. He found also one part in 7000 of invert sugar. Examination of beer made with brewing material manufactured with acid containing selenium compounds demonstrated that the poison passes into the beverage. Animal experimentation has shown that the symptoms of selenium poisoning and of arsenic poisoning are in all respects similar. But the action of selenious acid is cumulative, and this helps explain the symptoms which were attributed to arsenic in cases in which the beer consumed contained but small traces of that substance. The marked occurrence of wasting was to be explained by the specific action of selenious acid, as might also the occurrence of symptoms in cases in which arsenic was not found in the ingesta.

According to Willcox (*The Lancet*, March 16, 1901, p. 778), while selenium gives no mirror in the absence of arsenic in the Marsh test, it has a most decided effect upon the nature of the mirror where arsenic is present. The proximal portion of the mirror is red in color, while the rest has the usual appearance; and the extent of the reddened portion varies according to the amount of selenium present. He found no selenium arsenic mirrors in an examination of many samples of arsenical beer.

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All communications should be addressed to

DR. FRANCIS R. PACKARD, 1831 Chestnut Street, Philadelphia, U. S. A.
Or
DR. HECTOR MACKENZIE, 34 Upper Brook Street, Grosvenor Square, London, W., England.